The claimed invention

Claims 1-17 are drawn to a composition for the repair or augmentation of tissue in an animal or human. The composition includes a biocompatible, bioabsorbable fluid which contains a polyhydroxyalkanoate which is injectable into a human or animal for repair or augmentation of tissue. Claims 29-30 are drawn to a composition suitable for use in the treatment of osteoarthritic knees. The composition includes a biocompatible, bioabsorbable fluid which contains a polyhydroxyalkanoate which is suitable for use as a viscosupplement. Claims 31-32 are drawn to a kit for delivering the a composition that includes a biocompatible, bioabsorbable fluid which contains a polyhydroxyalkanoate which is injectable into a human or animal for repair or augmentation of tissue.

It is important to note that the PHA composition is not a drug that includes a pharmacological response and is taken up by the tissue or its cells. The PHA composition defined in the claims is primarily a lubricant when used as a viscosupplement and a viscoelastic or elastomeric filling material when used as a bulking agent. The key properties of the PHA in these applications are its physical properties: viscoelasticity, elasticity, pulpability, flexibility, etc., and not those of any active substances that might be released from a PHA.

When used as a viscosupplement for treatment of arthritic knees, the PHA does not work by delivering a drug to reduce pain, but rather it works by physically replacing the cushion normally provided by the synovial fluid. Pain is decreased because the PHA composition has an elastoviscosity that can absrob shock at the knee. A drug that is delivered to treat pain does not treat underlying cause of arthritic knees – a decrease in the elastoviscosity of the synovial fluid.

When used as a bulking agent, the PHA composition's viscoelasticity and/or ability to be formed into a physical form that can create volume *in vivo* allows it to be placed in tissue either to expand the tissue (or example, in the treatment of urinary incontinence or vesicoureteral reflux) or fill voids (for example, in cosmetic applications). Again, there is no delivery of any active substance, and we are not aware of any active physiological process in this treatment beyond the provision of a physical medium.

Sankaram

Sankaram discloses microspheres which include both polymer and lipid components, for use in drug delivery (col. 2, line 67 to col. 3, line 1; col. 8, line 57 to col. 9, line 35). Polyhydroxyalkanoate (PHA) can be used to make the microspheres (col. 3, line 17). There is no disclosure of a fluid composition containing PHA that imparts to the fluid composition properties so as to make it suitable for the repair or augmentation of tissue in an animal or human, as claimed.

The Examiner asserted that the prodrug defined in Sankaram is delivered to the cells or tissue. However, as discussed above, the Examiner's assertion, even if were true, is still irrelevant to the patentability of the claimed composition and kit.

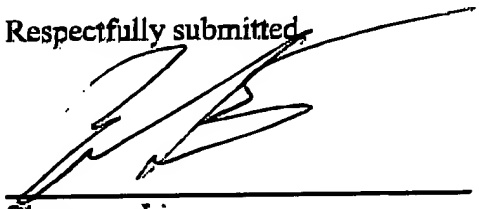
The Examiner further asserted that the use of the composition for the repair or augmentation of tissue does not differentiate the claimed composition from that described in Sankaram. The applicants respectfully disagree. As discussed above, the claimed composition is a fluid suitable for tissue repair or augmentation or use as a viscosupplement because of its physical properties, e.g., viscoelasticity, elasticity, pulpability, or flexibility, which are attributes

of PHA compositions having a certain type of PHA polymer of certain molecular weight in certain formulations (see, e.g., p. 8, line 24 to p. 11, line 19 of the present application). In contrast, the PHA polymer is used for forming the composition defined in Sankaram because of its biodegradability. One of ordinary skill in the art would appreciate that all PHA polymers are biodegradable, but certainly not all PHA polymers have necessary physical properties such as viscoelasticity, elasticity, pulpability or flexibity so as to be suitable for use in the compositions defined in claims 1-17 and 29-32.

Therefore, Sankaram does not disclose nor render obvious each and every feature of the claimed composition.

Allowance of all claims 1-17 and 29-32 is earnestly solicited.

Respectfully submitted,



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RESPONSE TO OFFICE ACTION

Certificate of Facsimile Transmission

I hereby certify that this Amendment and Response to Office Action, and any documents referred to as attached therein are being facsimile transmitted on this date, August 21, 2002 to the Commissioner for Patents, U.S. Patent and Trademark Office, Washington, DC 20231.

Peggy Bailey

Peggy Bailey

Date: December 18, 2002

APPENDIX: Claims as pending

1. (amended) A composition for the repair or augmentation of tissue in an animal or human, comprising

a biocompatible, bioabsorbable fluid which comprises a polyhydroxyalkanoate which is injectable into a human or animal for repair or augmentation of tissue.

2. The composition of claim 1 wherein the polyhydroxyalkanoate is a liquid or wax at a temperature between about 20 and 25 °C.

3. The composition of claim 1 wherein the polyhydroxyalkanoate is liquid at the body temperature of the animal.

4. The composition of claim 1 wherein the polyhydroxyalkanoate is a liquid at about 37 °C.

5. The composition of claim 1 wherein the biocompatible fluid is a microdispersion of particles of the polyhydroxyalkanoate dispersed in a physiologically compatible liquid carrier.

6. The composition of claim 5 wherein the carrier is a second polyhydroxyalkanoate or an aqueous solution.

7. (amended) The composition of claim 5 wherein the particles have a diameter of less than about 500 μm.

8. The composition of claim 7 wherein the diameter is less than about 50 μm.

9. The composition of claim 8 wherein the diameter is less than about 5 μm.

10. The composition of claim 1 wherein the polymer is derived from one or more monomers selected from the group consisting of 2-hydroxybutanoate, 3-hydroxyalkanoates, 3-

hydroxyalkenoates, 4-hydroxyalkanoates, 4-hydroxyalkenoates, 5-hydroxyalkanoates, 5-hydroxyalkenoates, 6-hydroxyalkanoates, and 6-hydroxyalkenoates.

11. (amended) The composition of claim 1 wherein the polyhydroxyalkanoate has a molecular weight of less than 100,000 as determined by gel permeation chromatography.

12. (amended) The composition of claim 11 wherein the molecular weight is less than 50,000 as determined by gel permeation chromatography.

13. The composition of claim 1 having a viscosity between about 1 and 100,000 cP.

14. The composition of claim 13 having a viscosity between about 1 and 10,000 cP.

15. (amended) The composition of claim 1 further comprising a bioactive agent.

16. The composition of claim 1 further comprising a peptide or protein.

17. The composition of claim 1 wherein the polyhydroxyalkanoate is amorphous.

Please cancel claims 18-28.

29. (amended) A composition suitable for use in the treatment of osteoarthritic knees comprising

a biocompatible, bioabsorbable fluid which comprises a polyhydroxyalkanoate, wherein the composition is suitable for use as a viscosupplement

30. The composition of claim 28 wherein the polyhydroxyalkanoate is amorphous.

31. (amended) A kit comprising

(a) the composition of claim 1; and

(b) a means for delivering the composition to a patient.

32. The kit of claim 31 wherein the means for delivering comprises a needle and a syringe.